



TUFF-SEAL™ TECHNICAL REFERENCE SECTION

RoHS STATEMENT

Remke Industries supports the European Union's efforts to remove harmful chemicals from electrical products. In compliance with Directive 2011/65/EU of the European Parliament and the Council of the European Union regarding the restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS), Remke Industries certifies either:

1. The maximum concentration values of weight in homogenous materials for the substances referred to in Article 4(1) of directive 2002/95/EC that are contained in the Products do not exceed the maximum concentration values of 0.1% in respect of lead, mercury, hexavalent chromium, polybrominated biphenyls, polybrominated diphenyl ethers, and 0.01% in respect of cadmium. OR
2. The product supplied is exempt from this directive.

Remke Industries certifies that all products of our manufacture are fully compliant to the current RoHS Directive.

ISO CERTIFICATION



On July 1st, 2003 Remke Industries received ISO 9001 : 2000 certification which certifies that Remke is compliant with current ISO standards.

KNOCKOUT DIMENSIONS

N.P.T. Hub Size	Knockout Hole Recommended (Min to Max/ Inches)
1/4"	.540 to .570
3/8"	.671 to .701
1/2"	.859 to .906
3/4"	1.094 to 1.141
1"	1.359 to 1.406
1 1/4"	1.719 to 1.766
1 1/2"	1.969 to 2.016
2"	2.453 to 2.500
2 1/2"	2.953 to 3.000
3"	3.578 to 3.625
3 1/2"	3.570 TO 4.040
4"	4.550 TO 4.630

OPERATING TEMPERATURES

Material	Temperature range
Aluminum	-40°F to +300°F (-40°C to +149°C)
Buna-N	-40°F to +250°F (-40°C to +121°C)
Nylon	-40°F to +225°F (-40°C to +107°C)
Steel	-60°F to +1000°F (-51°C to +537°C)
Stainless Steel	-60°F to +1000°F (-51°C to +537°C)
Neoprene (bushings)	-40°F to +250°F (-40°C to +121°C)
Silicone (bushings)	-150°F to + 390°F (-101°C to +199°C)
Valox	-40°F to +250°F (-40°C to +121°C)
Dome-Cap Connectors:	
Non-Metallic	-22°F to +176°F (-30°C to +80°C)
Metallic	-40°F to +212°F (-40°C to +100°C)

FLAMMABILITY

Component	Rating
Mesh Grip	UL 94HB
Fitting	UL 94V-2

Note: Non-metallic cord connectors will not support combustion.

APPROVALS, CERTIFICATION & COMPLIANCES

AGENCY	FILE NUMBER	PRODUCT OR COMPONENT
Underwriters Laboratories Inc. (UL)	E53599	RSR Series (Straight, 90°, 45°) RSP Series (Straight, 90°) RSM Cord Grips RSRs Cord Grips RSRF Series
	E52002	Liqua-Seal Connectors
	E52002(N)	WH Series Watertight Conduit Hubs
	E157356(N)	WH Series Watertight Conduit Hubs
Canadian Standards Association (CSA)	28985	RSR Series (Straight, 90°, 45°) RSP Series (Straight, 90°) RSRS Cord Grips RSRF Series RSSS Series RSPV Series RTK Series MC Cable Connectors Watertight Conduit Hubs
National Electrical Code (NEC)	Articles 400-10	RSR Series (Straight, 90°, 45°)
	Articles 400-14	RSP Series (Straight, 90°) RSM Cord Grips RSRS Cord Grips RSRF Series
	Articles 501-4(B)	WH Series Watertight Conduit Hubs
	Articles 502-4(A)	WH Series Watertight Conduit Hubs
	Articles 503-3(A)	WH Series Watertight Conduit Hubs
ROHS & WEE	All Tuff-Seal and Tuff-Link Products are Compliant	

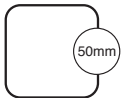

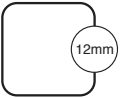

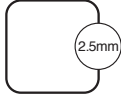
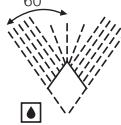



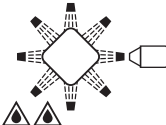


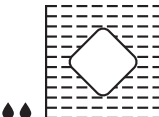
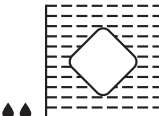
HAZARDOUS LOCATIONS

Definition	Remke Products
The Remke products listed are suitable for use in hazardous locations per Class I, Div. 2, Class II, Div 1 & 2, and Class III, Div. 1 & 2	RSR Series (Straight, 90°, 45°) WH Series Watertight Conduit Hubs RSP Series (Straight, 90°) RSM Cord Grips, RSRs Cord Grips RSRF Series

RATINGS/MATERIAL OF CONSTRUCTION

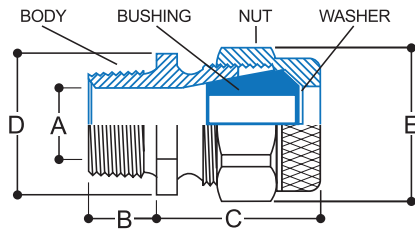
MATERIAL	IP 54 AND NEMA 3	IP 54 AND NEMA 3R	IP65 AND NEMA 4	IP 56 AND NEMA 4X	IP67 AND NEMA 6	IP 52 AND NEMA 12
Aluminum	X	X	X	—	X	X
Nickel-Plated Aluminum	X	X	X	X	X	X
Steel	X	X	X	—	X	X
Stainless Steel	X	X	X	X	X	X
Nylon	X	X	X	—	X	X
Valox	X	X	X	X	X	X

IP RATINGS DEFINITION

First Digit	Protection From Solid Objects	Second Digit	Protection From Moisture
0	Non-Protected	0	Non-Protected
1	 <p>Protected against solid objects over 50mm e.g hands, large tools</p>	1	 <p>Protection against vertically falling drops of water</p>
2	 <p>Protected against solid objects over 12mm e.g hands, large tools</p>	2	 <p>Protection against direct sprays of water up to a 15° angle</p>
3	 <p>Protection from entry by solid objects over 2.5mm e.g. wire or small tools</p>	3	 <p>Protection against direct sprays of water up to a 60° angle</p>
4	 <p>Protection from entry by solid objects over 1.0mm e.g. wires or tools</p>	4	 <p>Protection against water sprayed from any direction. Limited ingress permitted.</p>
5	 <p>Protection against deposits of dust e.g. against equipment damage due to deposits</p>	5	 <p>Protection against low pressure water jets from any direction. Limited ingress permitted</p>
6	 <p>Total protection against dust ingress e.g. Dust-Tight</p>	6	 <p>Protection against high pressure water jets from any direction. Limited ingress permitted.</p>
IP CODE EXAMPLE			
IP54 = IP (IP LETTER CODE), 5 (1st Digit), 4 (2nd Digit)			
7		 <p>Protection against immersion between 15cm and 1M</p>	
8		 <p>Protection against complete and continuous immersion in water under pressure e.g Water-Tight</p>	

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RSR STRAIGHT CORD GRIP DIMENSIONS



ALUMINUM AND NICKEL-PLATED ALUMINUM

Conduit Size	RSR Series	Form Size	A Inside Body Dia.	B	C	D Body Hex	E Nut
1/4"	0000	1	0.34	0.44	0.96	0.88	0.96
3/8"	000	1	0.47	0.44	0.96	0.88	0.96
1/2"	1000	1	0.47	0.44	0.95	0.88	0.96
1/2"	100	2	0.61	0.56	1.12	1.00	1.25
1/2"	1200	3	0.62	0.54	1.40	1.25	1.53
3/4"	2100	2	0.61	0.56	1.20	1.12	1.25
3/4"	200	3	0.80	0.57	1.42	1.25	1.53
3/4"	2300	4	0.81	0.57	1.49	1.37	1.72
1"	300	4	0.99	0.62	1.46	1.44	1.72
1"	3500	5	1.06	0.69	1.91	2.00	2.47
1 1/4"	400	5	1.32	0.69	1.80	2.00	2.00
1 1/2"	500	5	1.43	0.69	1.84	2.25	2.47
1 1/2"	5600	6	1.50	0.80	2.39	2.62	2.97
2"	600	6	2.00	0.80	2.39	2.83	2.97
2"	6700	7	1.90	0.80	3.32	4.00	4.20
2 1/2"	700	7	2.36	1.28	3.19	4.00	4.20
3"	8700	7	2.35	1.31	3.07	4.00	4.20
3"	900	9	3.05	1.39	3.14	4.75	4.00
3 1/2"	1150	8	3.25	1.47	4.65	5.36	6.22
4"	1250	9	3.60	1.47	4.86	5.82	6.66

Dimension A is the minimum Inside Body Diameter. Other dimensions are nominal.

Dimension E is cross corners of the nut.

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NYLON AND VALOX

Conduit Size	Form Size	A Inside Body Dia.	B	C	D Body Hex	E Nut
3/8"	1	0.44	0.49	0.70	0.94	0.94
1/2"	2	0.50	0.88	1.12	1.25	1.25
3/4"	3	0.56	0.88	1.38	1.50	1.50

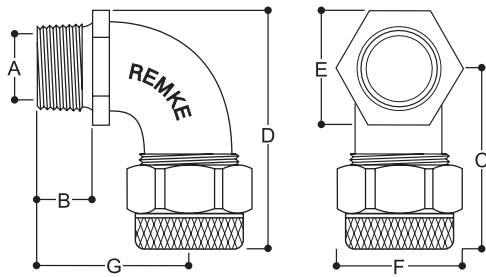
STEEL

Conduit Size	Form Size	A Inside Body Dia.	B	C	D Body Hex	E Nut
3/8"	1	0.47	0.44	0.56	0.88	0.88
1/2"	2	0.62	0.56	0.69	1.00	1.26
3/4"	3	0.81	0.56	0.85	1.25	1.37
1"	4	0.99	0.63	0.94	1.43	1.56

STAINLESS STEEL

Conduit Size	RSSS SERIES	Form Size	A Inside Body Dia.	B	C	D Body Hex	E Nut
3/8"	000	1	0.47	0.44	0.88	0.88	0.96
1/2"	100	2	0.61	0.56	1.18	1.12	1.25
3/4"	200	3	0.81	0.57	1.44	1.37	1.50
1"	300	4	0.99	0.62	1.49	1.56	1.72
1 1/4"	400	5	1.32	0.69	2.04	2.00	2.48
1 1/2"	500	5	1.44	0.69	1.93	2.25	2.48
2"	600	6	2.00	0.80	2.43	2.83	2.97
2 1/2"	700	7	2.36	1.25	2.96	3.75	3.95
3"	900	9	3.05	1.39	3.01	4.75	5.00
3 1/2"	1150	11	3.00	1.47	4.41	5.36	6.22
4"	1250	12	3.60	1.47	4.53	5.82	6.66

RSR SERIES 90° CORD GRIP DIMENSIONS



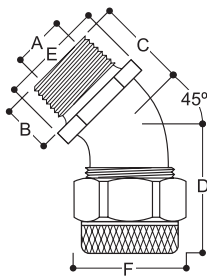
Note: Dimension "E" is across flats
Dimension "F" is across corners

ALUMINUM AND NICKEL-PLATED ALUMINUM

Conduit Size	A Body Bore	B	C	D	E Body Hex	F Nut	G
3/8"	0.45	0.44	1.51	2.00	0.98	0.96	1.31
1/2"	0.58	0.56	1.88	2.39	1.03	1.26	1.50
3/4"	0.76	0.63	2.25	2.88	1.25	1.55	1.99
1"	0.99	0.63	2.41	3.13	1.44	1.74	2.00
1 1/4"	1.28	0.69	3.19	4.41	2.13	2.47	2.69
1 1/2"	1.40	0.69	3.19	4.41	2.13	2.47	2.69
2"	1.90	0.81	4.03	5.56	2.81	2.97	3.19

NOTE: 1 1/4" and 1 1/2" size grips have hex positioned per right view above. All other sizes have hex positioned per left view below.

RSR SERIES 45° CORD GRIP DIMENSIONS



Note: Dimension "E" is across flats
Dimension "F" is across corners

ALUMINUM AND NICKEL-PLATED ALUMINUM

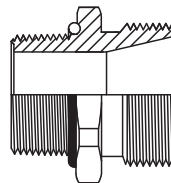
Conduit Size	A Body Bore	B	C	D	E Body Hex	F Nut
3/8"	0.45	0.44	1.51	2.00	0.98	0.96
1/2"	0.58	0.56	1.88	2.39	1.03	1.26
3/4"	0.76	0.63	2.25	2.88	1.25	1.55
1"	0.99	0.63	2.41	3.13	1.44	1.74
1 1/4"	1.28	0.69	3.19	4.41	2.13	2.47
1 1/2"	1.40	0.69	3.19	4.41	2.13	2.47
2"	1.90	0.81	4.03	5.56	2.81	2.97

NOTE: 1 1/4" and 1 1/2" size grips have hex positioned per right view above. All other sizes have hex positioned per left view below.

CONDUIT SEALS AND LOCKNUTS

Conduit Sestd	Size	Locknuts
SOR-38	3/8"	LN-38
SOR-1-VNT	1/2"	LN-50
SOR-2	3/4"	LN-75
SOR-3	1"	LN-100
SOR-4	1 1/4"	LN-125
SOR-51	1 1/2"	LN-150
SOR-16	2"	LN-200
—	2 1/2"	LN-250
—	3"	LN-300

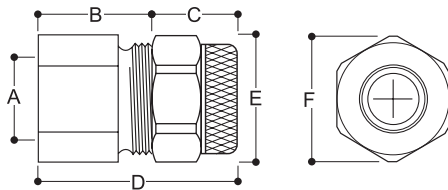
RSR SERIES CORD GRIPS WITH O-RINGS



These Tuff-Seal RSR grips feature an O-ring that creates a watertight seal when they are used in a taper tapped conduit hub. In these applications gaskets must be used in either the knockouts or clearance drilled holes. To ensure a more reliable seal an embedded O-ring should be utilized. Many of the standard Tuff-Seal cord grips listed in this catalog feature a body hex large enough to permit machining a groove for the embedded O-ring.

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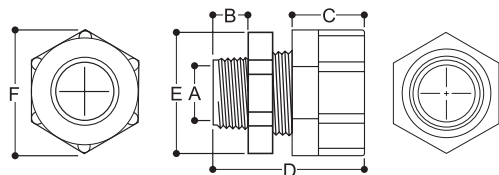
RSRF SERIES CORD GRIP DIMENSIONS



SPECIFICATIONS						
Conduit Size	A Body Bore	B	C	D	E Body Hex	F Nut
3/8"	0.44	0.62	0.75	1.38	0.88	0.99
1/2"	0.62	0.69	1.06	1.75	1.12	1.33
3/4"	0.63	0.81	1.00	1.81	1.31	1.33
1"	0.94	0.94	1.31	2.25	1.63	1.70
1 1/4"	1.44	1.06	1.69	2.75	2.25	2.55
1 1/2"	1.44	1.06	1.69	2.75	2.25	2.55
2"	1.88	1.25	2.38	3.63	2.75	3.25

NOTE: Dimensions for the RSRH Hub Style Cord Grips are the same as above except for the addition of the nipple.

RSP AND RSPV STRAIGHT CORD GRIPS DIMENSIONS



SPECIFICATIONS						
Conduit Size	A Body Bore	B	C	D	E Body Hex	F Nut
3/8"	0.44	0.49	0.70	1.63	0.94	0.94
1/2"	0.57	0.50	0.88	2.01	1.12	1.25
3/4"	0.76	0.56	0.88	2.10	1.38	1.50

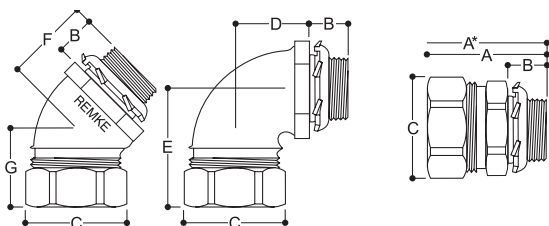
Dimension A is the minimum Body Bore. Other dimensions are nominal.

Dimension D is with the Nut snug but bushing uncompressed.

Dimension E is across the Straight Body hex. flats. Dimension F is across Nut hex. flats.

Dimensions are approximate.

LIQUA-SEAL CONNECTOR DIMENSIONS



SPECIFICATIONS										
Conduit Size	Hub Size	A	A*	B	C Flats	C Corners	D	E	F	G
3/8"	1/2"	1.47	4.47	0.50	1.00	1.10	1.37	1.58	0.84	1.26
1/2"	1/2"	1.47	4.97	0.50	1.13	1.23	1.37	1.75	0.87	1.47
3/4"	3/4"	1.54	5.54	0.56	1.38	1.52	1.53	1.91	0.95	1.55
1"	1"	1.96	6.96	0.64	1.63	1.80	1.81	2.23	1.10	1.81
1 1/4"	1 1/4"	2.09	8.09	0.72	2.25	2.41	2.05	2.33	1.35	1.84
1 1/2"	1 1/2"	2.09	8.84	0.72	2.50	2.68	2.18	2.46	1.43	1.90
2"	2"	2.16	10.16	0.78	3.00	3.21	2.51	2.73	1.53	2.00

NOTE: Nominal Dimensions in Inches. A* Dimension is overall length of connector with wire mesh grip. Larger sizes are available. Contact factory.

THREAD SPECIFICATIONS

PG THREAD SPECIFICATIONS

Thread Size	Major Diameter (mm)	Pitch (mm)
Pg 7	12.5	1.27
Pg 9	15.2	1.41
Pg 11	18.6	1.41
Pg 13.5	20.4	1.41
Pg 16	22.5	1.41
Pg 21	28.3	1.56
Pg 29	37.0	1.56
Pg 36	47.0	1.56
Pg 42	54.0	1.56
Pg 48	59.3	1.56

NPT THREAD SPECIFICATIONS

Thread Size	Major Diameter (mm)	Pitch (mm)
NPT 1/4"	13.7	1.41
NPT 3/8"	17.1	1.41
NPT 1/2"	21.3	1.81
NPT 3/4"	26.7	1.81
NPT 1"	33.4	2.21
NPT 1-1/4"	48.3	2.21
NPT 1-1/2"	47.0	2.21
NPT 2"	60.3	2.21

METRIC THREAD SPECIFICATIONS

Thread Size	Major Diameter (mm)	Pitch (mm)
M12 X 1.5	12	1.50
M16 X 1.5	16	1.50
M20 X 1.5	20	1.50
M25 X 1.5	25	1.50
M32 X 1.5	32	1.50
M40 X 1.5	40	1.50
M50 X 1.5	50	1.50
M63 X 1.5	63	1.50